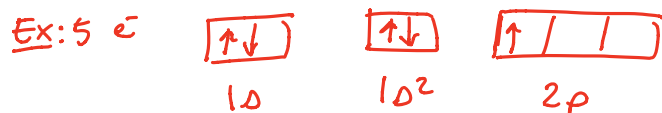


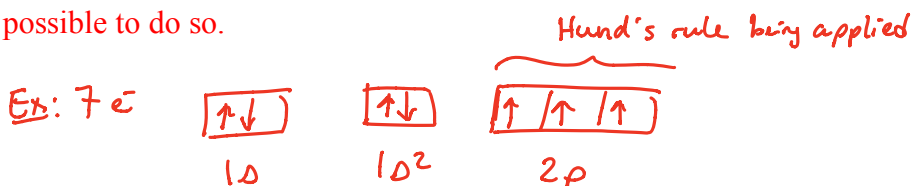
Electron Configuration – Worksheet 2

1. Explain Aufbau's principle, Hund's rule, and the Pauli exclusion principle. Provide one example for each principle and rule.

(1) Aufbau's principle: Electrons will always fill the lowest available energy level.



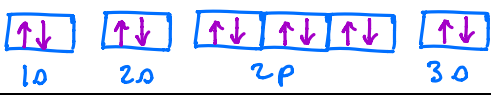
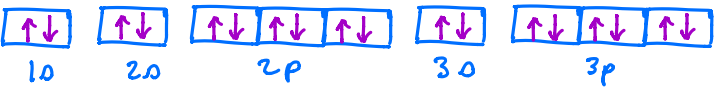
(2) Hund's rule: Each orbital must be occupied by a single electron until it is no longer possible to do so.



(3) Pauli exclusion principle: Each orbital can only contain a maximum of two electrons, and they must be of opposite spins.



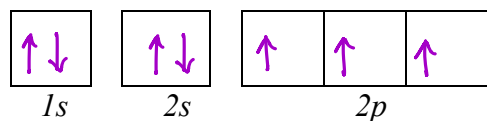
2. For each of the following atoms, write the full electron configuration and draw the corresponding orbital diagram.

| Atom | # of Electrons | Electron Configuration and Orbital Diagram |
|------|----------------|--|
| Mg | 12 | $1s^2 2s^2 2p^6 3s^2$  |
| Ar | 18 | $1s^2 2s^2 2p^6 3s^2 3p^6$  |

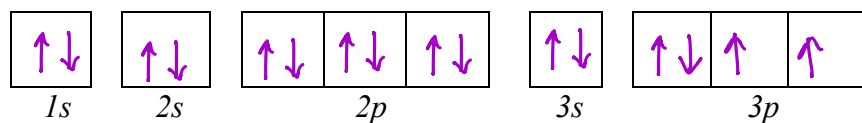
| | | |
|----|----|--|
| P | 15 | $1s^2 2s^2 2p^6 3s^2 3p^3$ |
| Ge | 32 | $1s^2 2s^2 2p^6 3s^2 3p^3 4s^2 3d^{10} 4p^2$ |
| Ca | 20 | $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$ |
| Cl | 17 | $1s^2 2s^2 2p^6 3s^2 3p^5$ |

3. Write the full electron configuration, short-hand electron configuration, and fill in the orbital diagrams, for the following elements.

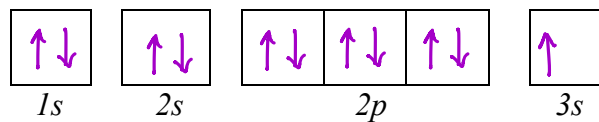
1. Nitrogen $1s^2 2s^2 2p^3$, [He] $2s^2 2p^3$



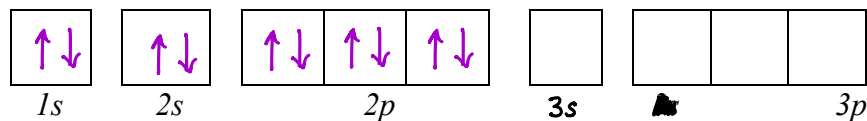
2. Sulfur $1s^2 2s^2 2p^6 3s^2 3p^4$, [Ne] $3s^2 3p^4$



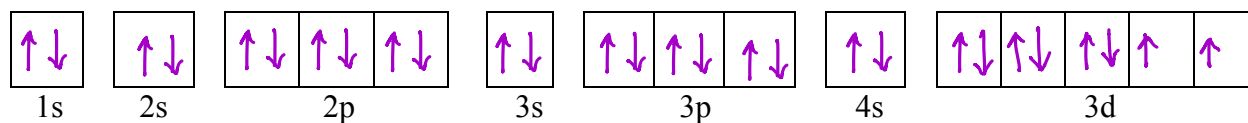
3. Sodium $1s^2 2s^2 2p^6 3s^1$, [Ne] $3s^1$



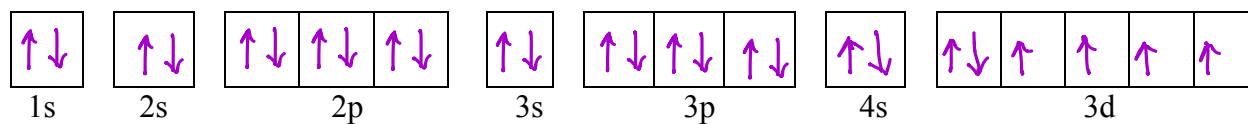
4. Neon $1s^2 2s^2 2p^6$, [He] $2s^2 2p^6$



5. Nickel $s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^8$, [Ar] $4s^2 3d^8$



6) Iron $s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^6$, [Ar] $4s^2 3d^6$



7) Zinc $s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10}$, [Ar] $4s^2 3d^{10}$

